

# COMPACT DISK STORAGE FILE

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*[Kon'pakuto disuku shuhnoh fairu]*

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[There are no amendments to this patent.]

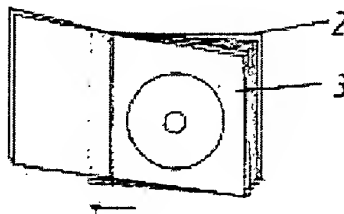
[Title of the invention]

Compact disk storage file

[Abstract]

[Purpose] The purpose of the present invention is to produce an easy-to-carry and simple compact disk storage film.

[Means of solution] A compact disk storage file wherein multiple sheets 3 having a layer structure consisting of weak adhesive layer onto which a compact disk can be applied or removed/paper base material/polyethylene layer/silicone release layer, and front cover paper and back cover paper 2 are overlaid and cut; then, one edge is bonded with adhesive 4.



[Claims of the invention]

[Claim 1] A compact disk storage file wherein many sheets produced by depositing a layer of polyolefin on one surface of a paper base material; further depositing a silicone type release layer on said layer, and depositing a weak adhesive layer to which a compact disk can be applied or removed and cutting to form a rectangle or square shape with a size greater than that of a compact disk, and binding one edge with a front cover sheet and a back cover sheet by means of an adhesive or staple.

[Claim 2] The compact disk storage file described in Claim 1 wherein the weak adhesive layer is formed as many stripes that run parallel at equal intervals.

[Detailed description of the invention]

[0001]

[Technical field of the invention] The present invention pertains to a compact disk storage file capable of protecting the information recording surface of a compact disk from adsorption of dust and becoming soiled, as well as protecting the compact disk itself from impact and deformation so that it is capable of storing multiple compact disks without bulkiness.

[0002]

[Prior art] Until recently, an exclusive plastic case made of relatively thick resin sheets were used as compact disk storage cases. The above-mentioned exclusive plastic case is effective for protection of compact disks from external force, but the case is bulky and is relatively heavy, and is not convenient for carrying many compact disks. Furthermore, the stored compact disk is

exposed to the air and adsorption of dust and condensation of moisture is likely to occur.

Furthermore, opening and closing the cover is required for storage and removal of the compact disk, which is a nuisance.

[0003] In order to avoid the problems inherent in the above-mentioned exclusive plastic case, as a means to protect the compact disk, from the adsorption of dust, a method wherein a film coated with a pressure-sensitive adhesive and having the same shape as the compact disk is applied to the compact disk is disclosed in publications such as Utility Models Sho 60-60019 [1985], Sho 63-68124 [1988], and Sho 63-157820 [1988], and Patent Gazette No. Hei 1-181130 [1989], but in these cases also, a compact disk having a protective sheet on the surface is stored in a plastic case.

[0004] Furthermore, many different types of pouch-like storage cases are described in Japanese Kokai [Unexamined] Patent Application No. Hei 6-298292 [1994] , Japanese Kokai [Unexamined] Patent Application No. Hei 10-1185 [1998] , Japanese Kokai [Unexamined] Patent Application No. Hei 9-315479 [1997] and Japanese Kokai [Unexamined] Patent Application No. Hei 9-255073 [1997]. The storage pouch described in Japanese Kokai [Unexamined] Patent Application No. Hei 6-298292 [1994] has a base material made of a non-woven fabric, and fine dust adsorbed on the compact disk can be wiped clean and the compact disk is protected from scratches and good impact resistance based on the cushioning effect, and lightness of weight that is suitable for carrying, and storage and removal of the compact disk can be done easily and furthermore, it is inexpensive. However, the compact disk is not held securely inside the above-mentioned storage pouch; thus, it can fall out unexpectedly, at times. As a technique to improve the above-mentioned problem, a structure where a protective sheet

having a foam layer made of a thermoplastic resin is inserted into a paper pouch has been proposed in Japanese Kokai [Unexamined] Patent Application No. Hei 10-1185 [1998], and a structure consisting of an inner pouch made of a non-woven fabric and an outer pouch made of a slightly hard material is proposed in Japanese Kokai [Unexamined] Patent Application No. Hei 9-315479 [1997]. Furthermore, in the invention disclosed in Japanese Kokai [Unexamined] Patent Application No. Hei 9-255073 [1997], a film coated with a pressure-sensitive adhesive and having the same shape as the compact disk is applied to the compact disk and it is subsequently packed in a thick paper pouch. When the compact disk is stored in the above-mentioned pouch for protection, only one compact disk is stored in one pouch and multiple disks cannot be stored in the same pouch.

[0005] The invention proposed in Japanese Kokai [Unexamined] Patent Application No. Hei 9-249278 [1997] is a disk storage case where the protective pouch is not required and packaging can be achieved at a low cost and with high efficiency, and the case has a structure where a paper laminated with a protective film is used as the inner surface and is overlaid to form a pocket for the compact disk, and the thickness of the protective film is increased around the border of the compact disk for protection. The cost of the above-mentioned case is lower than that of plastic case, but only a single disk can be stored, and the case does not necessarily meet the requirements of the market.

[0006] The invention proposed in Japanese Kokai [Unexamined] Patent Application No. Hei 9-328183 [1997] is a floppy disk file where a base material such as film or paper coated with a silicone resin on the surface is used to increase the adhesion with a compact disk is punched out or cut to form a rectangular, square or horseshoe shape, and holes are punched by means of a pin

holder or binder system or when thermal fusion or high frequency welding is used, multiple pieces of the above-mentioned sheets are stacked and attached to the cover or storage pouch. However, a simple product where fewer multiple compact disks can be easily stored is required in marketplace.

[0007]

[Problems to be solved by the invention] Based on the above-mentioned background, the purpose of the present invention is to produce a compact disk storage file without the above-mentioned existing problems. In other words, the purpose of the present invention is to produce a compact disk storage file capable of protecting the information recording surface of the compact disk from adsorption of dust and soil, as well as the compact disk itself from impact and deformation and capable of storing multiple numbers of compact disks without bulkiness.

[0008]

[Means to solve the problem] In order to achieve the above-mentioned purpose, the present invention is a compact disk storage file wherein many sheets produced by depositing a polyolefin layer on one surface of a paper base material, further depositing a silicone type release layer on said layer, and depositing a weak adhesive layer to which a compact disk can be applied and removed, which sheets are cut to form rectangles or squares with a size greater than that of a compact disk, and one edge is bound along with a front cover sheet and a back cover sheet by means of an adhesive or staples.

[0009] For the paper base material used for the sheet, a printing paper or packaging paper can be used, and the weight of the paper is in the range of 70~200 g/m<sup>2</sup>, and drawing paper or coated drawing paper can be used for the front sheet and back sheet, and the weight of this paper is in

the range of 200~300 g/m<sup>2</sup>.

[0010] In order to prevent penetration of the solvent type silicone coating composition and to improve handling properties based on an increase in strength of the sheet, a sizing layer is formed on the surface where the silicone type release layer is to be formed. In comparison to application of pigments and adhesives, the cost of the sizing is relatively low and coating can be done easily; thus, a polyolefin type resin, for example, a high-pressure, low-density polyethylene is used in the present invention. The thickness of the laminated layer is preferably in a range of 10~40  $\mu\text{m}$ .

[0011] For the release agent, standard adduct type or condensed type silicone release agents can be used, and in particular, an adduct type silicone based release agent having a high reactivity can be used effectively.

[0012] Furthermore, in order to make writing possible, a silicone resin made of an organic silicon compound having an  $\text{SiO}_2$  unit and an  $(\text{CH}_3)_3\text{SiO}_{1/2}$  unit or  $\text{CH}_2=\text{CH}(\text{CH}_3)_2\text{SiO}_{1/2}$  unit in the silicone type release agent is mixed. The mixing ratio of the above-mentioned silicone resin is in the range of 30~60 wt% for the silicone type release agent. When the above-mentioned mixing ratio is 30 wt% or less, the writing properties are not adequate; on the other hand, when the mixing ratio exceeds 60 wt%, the release force with the pressure-sensitive adhesive layer of the corresponding sheet is increased and opening of the page is made difficult, and handling is difficult.

[0013] For the weak adhesive layer, for example,

(1) a pressure-sensitive adhesive mainly comprising an ethylene-propylene-diene three-component copolymer rubber, butyl rubber, and halogenated rubber, and mixed with a tackifier such as a liquid polybutene, liquid polyisobutylene, inorganic fillers and hardener,

- (2) an acrylic type pressure-sensitive adhesive mixed with fine spherical particles and plasticizers,
  - (3) a hot-melt pressure-sensitive adhesive mainly comprising a styrene-isoprene-styrene copolymer,
- etc. can be mentioned.

[0014] The fine spherical particles can be produced by suspension polymerization of 95 parts by weight of 2-ethylhexyl acrylate and 5 parts of acrylic acid, and mixing the above-mentioned fine spherical particles with an acrylic emulsion type pressure-sensitive adhesive, or the fine spherical particles are dried and mixing with the acrylic emulsion type pressure-sensitive adhesive is done to produce a weak pressure-sensitive adhesive to which a compact disk can be applied and removed.

[0015] Furthermore, when mixing is carried out for 5~20 wt% of plasticizer and 0.1~10 wt% of optional release agent with an acrylic pressure-sensitive adhesive, it is possible to produce a weak pressure-sensitive adhesive where application and removal of the compact disk can be made possible.

[0016] Furthermore, in the case of a hot-melt pressure-sensitive adhesive, the mixing ratio of the resin is reduced, and the mixing ratio of a plasticizer such as oil is increased and hot-melt extrusion is carried out from a T-die onto a paper base material to form multiple stripes each with a width of 0.5~10 mm at intervals of 5~10 mm so as to produce a weak pressure-sensitive adhesive where application and removal of the compact disk can be made possible.

[0017] When penetration of the pressure-sensitive adhesive occurs when the pressure-sensitive

adhesive is directly coated onto the paper base material, a method where coating of the pressure-sensitive adhesive is performed onto a silicone coated surface and subsequently rolled can be used effectively. When rolled, the pressure-sensitive adhesive can be transferred to the back surface of the paper base material, and rewinding is performed upon application and used as a sheet.

[0018] It is desirable for the adhesion of the weak pressure-sensitive adhesive to be in a range of 20~150 g/20 mm, preferably, in a range of 50~100 g/20 mm.

[0019] The coating ratio of the weak pressure-sensitive adhesive after drying is not especially limited, and the ratio of 5~40 g/m<sup>2</sup> is suitable, and 10~20 g/m<sup>2</sup> is further desirable.

[0020]

[Embodiment of the invention] compact disk storage file is further explained with embodiment 1 and embodiment 2 each shown in Fig. 1 and Fig. 2, respectively.

[0021] Hot-melt extrusion was carried out for a high-pressure low-density polyethylene onto one surface of a high-quality printing paper with a weight of 125 g/m<sup>2</sup> so as to form a sizing layer of 20 g/m<sup>2</sup>, and an adduct reaction type silicone release layer of 1 g/m<sup>2</sup> was further formed.

Subsequently, a weak pressure-sensitive adhesive produced by mixing 80 wt% of fine spherical particle produced by suspension polymerization reaction in terms of the solid parts, and 20 wt% an acrylic type pressure-sensitive adhesive in terms of the solid parts was coated onto the release layer so as to form the dry coating ratio of 10 g/m<sup>2</sup>, and production of rolled sheet 3 was performed. Then, the above-mentioned rolled sheet was rewound and 4 layers of sheet 3 were stacked on back cover sheet 2 made of a drawing paper of 205 g/m<sup>2</sup> with the weak pressure-sensitive adhesive layer surface facing upward, and a drawing paper used for the front cover

sheet 2 was further stacked, and cut to form the length of 15 cm and width of 16 cm, and one end was bound with adhesive 4 so as to produce a compact disk storage file where three pieces of compact disks can be stored (Fig. 1). Furthermore, 3 pieces of the sheets 3 were stacked on the cover sheet 2 made of a drawing paper of  $205 \text{ g/m}^2$  with the weak pressure-sensitive adhesive layer surface facing upward, and cut to form the length of 15 cm and width of 32 cm, and the center is stapled so as to produce a compact disk storage file where four pieces of compact disks can be stored (Fig. 2).

[0022]

[Effect of the invention] According to the present invention, it is possible to produce a compact disk storage file capable of protecting the information recording surface of the compact disk from adsorption of dust and soil, as well as the compact disk itself from impact and deformation and capable of storing multiple numbers of compact disks without bulkiness, and a simple and easy-to-carry around compact disk storage file is produced.

**[Brief description of figures]**

[Fig. 1] The perspective view that shows the first embodiment of the compact disk storage file of the present invention.

[Fig. 2] The perspective view that shows the second embodiment of the compact disk storage file of the present invention.

[Fig. 3] The top view that shows the first embodiment of the compact disk storage file of the present invention.

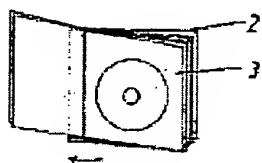
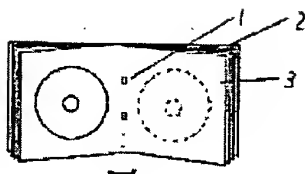
**[Explanation of codes]**

1 ... Staple

2 ... Front cover sheet and back cover sheet

3 ... Sheet

4 ... Area bonded by adhesive

**Fig. 1****Fig. 2`****Fig. 3**